

1. A method of treating a tissue injury, comprising:
providing a biocompatible tissue repair stimulating implant including abioabsorbable
polymeric foam component having pores with an open cell pore structure and a reinforcing
component formed of a biocompatible, mesh-containing material, wherein the foam
component is integrated with the reinforcing component such that the pores of the foam
component penetrate the mesh of the reinforcing component and interlock with the reinforcing
component;
placing the implant in a desired position relative to the tissue injury; and
affixing the implant in the desired position.

2. The method of claim 1, further comprising the step of loading the implant with at least one biological component.

3. The method of claim 2, wherein the injured tissue is selected from the group consisting of ligament tissue, tendon tissue, and nerve tissue.

4. The method of claim 1, wherein the tissue injury is within the hand or foot of a patient.

5. The method of claim 2, wherein the step of loading is conducted before placing the implant in a patient.

6. The method of claim 2, wherein the step of loading is conducted after placing the implant in a patient.

7. The method of claim 2, wherein the biological component is selected from the group consisting of antibiotics, antimicrobial agents, anti-inflammatory agents, growth factors, hormones, cytokines, proteins, glycosaminoglycans, immunosuppressants, nucleic acids, analgesics, cell types, viruses, virus particles, and combinations thereof.

8. The method of claim 7, wherein the protein is selected from the group consisting of a pleiotrophin, endothelin, tenascin, fibronectin, fibrinogen, vitronectin, V-CAM, I-CAM, N-CAM, elastin, fibrillin, laminin, actin, myosin, collagen, microfilament, intermediate filament, antibody, and fragments thereof.

5 9. The method of claim 7, wherein the growth factor is selected from the group consisting of a TGF- β , bone morphogenic protein, fibroblast growth factor, platelet-derived growth factor, vascular endothelial cell-derived growth factor, epidermal growth factor, insulin-like growth factor, hepatocyte growth factor, and agonists, antagonists and fragments thereof.

10. The method of claim 9, wherein the growth factor is autologous.

10 11. The method of claim 7, wherein the glycosaminoglycan is selected from the group consisting of heparan sulfate, heparin, chondroitin sulfate, dermatan sulfate, keratin sulfate, hyaluronan, and combinations thereof.

12. The method of claim 7, wherein the cell type is selected from the group consisting of osteocytes, fibroblasts, stem cells, pluripotent cells, chondrocyte progenitors, chondrocytes, osteocytes, osteoclasts, osteoblasts, endothelial cells, macrophages, adipocytes, monocytes, plasma cells, mast cells, umbilical cord cells, leukocytes, stromal cells, mesenchymal stem cells, epithelial cells, myoblasts, tenocytes, ligament fibroblasts, and bone marrow cells.

13. The method of claim 7, wherein the cell type associated with the implant comprises at least one cell that is responsive to one or more stimulators, wherein upon stimulation the cell secretes one or more cellular proteins.

14. The method of claim 13, wherein the stimulator is delivered to the implant prior to surgical implantation of the implant.

15. The method of claim 13, wherein the stimulator is delivered to the implant following surgical implantation of the implant.

25 16. The method of claim 1, wherein the step of affixing the tissue implant is accomplished by applying a fastener across the implant and adjacent tissue.

17. The method of claim 16, wherein the fastener is selected from the group consisting of sutures, staples, suture anchors, tissue tacks, darts, screws, arrows, fibrin glue, fibrin clots, biologically compatible adhesives, and combinations thereof.

5 18. The method of claim 1, wherein the injury to tissue is a tissue tear selected from the group consisting of a ligament tear, a tendon tear, and a nerve tear.

19. The method of claim 18, wherein the implant is placed within a lesion that constitutes the tear.

20. The method of claim 19, wherein the implant is of a size and shape such that it matches a geometry and dimension of the lesion.

10 21. The method of claim 18, wherein the implant is placed adjacent to a lesion that constitutes tear such that the implant reinforces the tissue.

22. The method of claim 21, wherein the implant is over the lesion.

23. The method of claim 21, wherein the implant is wrapped around the tissue bearing a lesion.

24. A method of treating a tissue injury, comprising:

providing a biocompatible tissue implant including a bioabsorbable polymeric foam component having pores with an open cell pore structure and a reinforcing component formed of a biocompatible, mesh-containing material, wherein the foam component is integrated with the reinforcing component such that the pores of the foam component penetrate the mesh of the reinforcing component and interlock with the reinforcing component;

incorporating a biological component within the implant; and

implanting the implant such that the biological component is able to be taken up by cells or cell types.

25. The method of claim 24, wherein the biological component is selected from the group consisting of nucleic acids, viruses, virus particles, and combinations thereof.

26. The method of claim 24, further comprising the step of enabling the cells or cell types to produce a protein that will affect healing of the tissue injury.

5 27. The method of claim 24, further comprising the step of enabling the cells or cell types to inhibit the production of a protein, the inhibition of which will enhance healing of the tissue injury.

2001-12-14 14:00:00